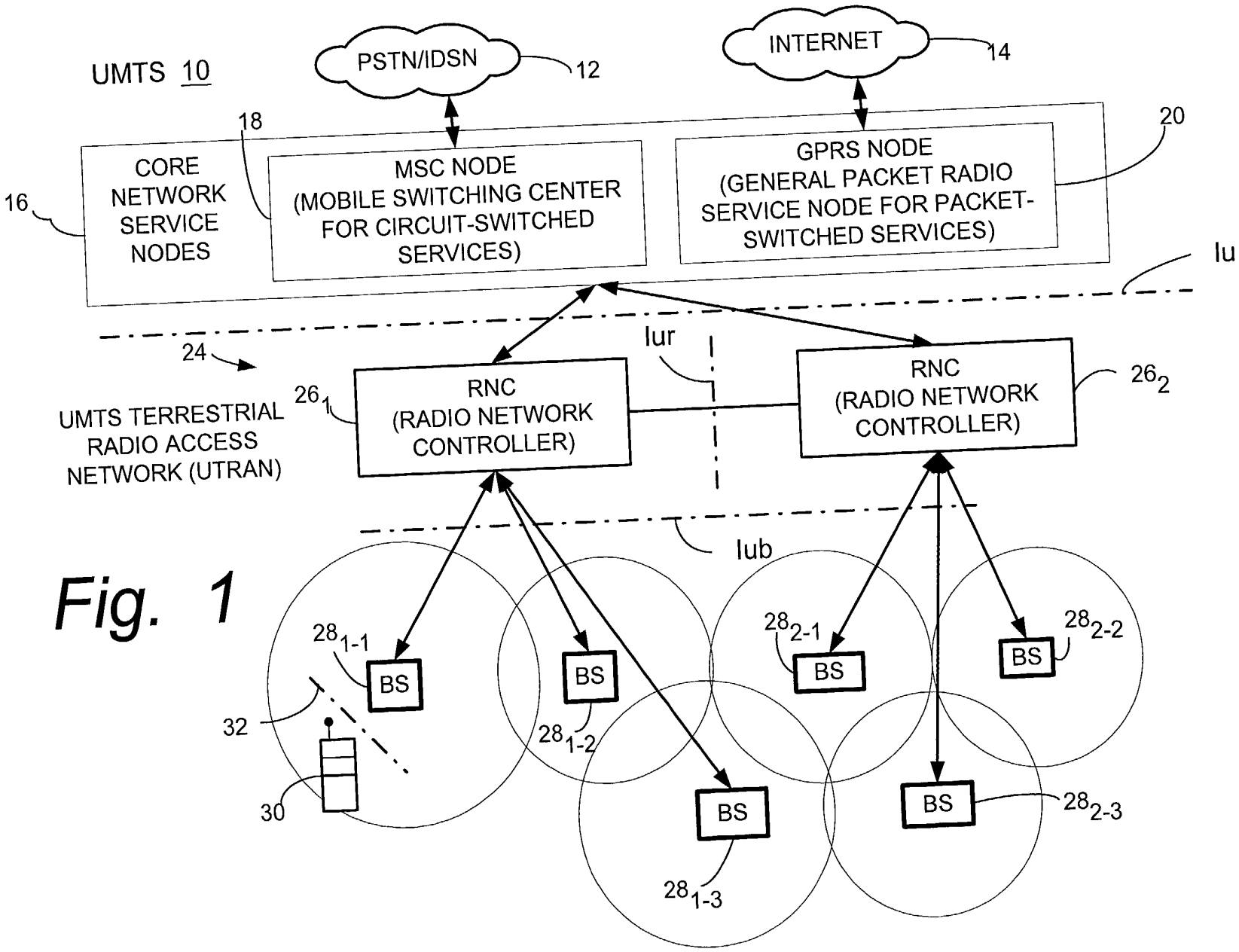

UMTS 10
PSTN/IDSN
12
INTERNET
14
18
20
16
CORE NETWORK SERVICE NODES
MSC NODE (MOBILE SWITCHING CENTER FOR CIRCUIT-SWITCHED SERVICES)
GPRS NODE (GENERAL PACKET RADIO SERVICE NODE FOR PACKET-SWITCHED SERVICES)
Iu
24
Iur
UMTS TERRESTRIAL RADIO ACCESS NETWORK (UTRAN)
26 1
RNC (RADIO NETWORK CONTROLLER)
RNC (RADIO NETWORK CONTROLLER)
26 2
Iub
28 1-1
BS
28 1-2
BS
28 1-3
BS
28 2-1
BS
28 2-2
BS
28 2-3
BS
32
30

Fig. 1

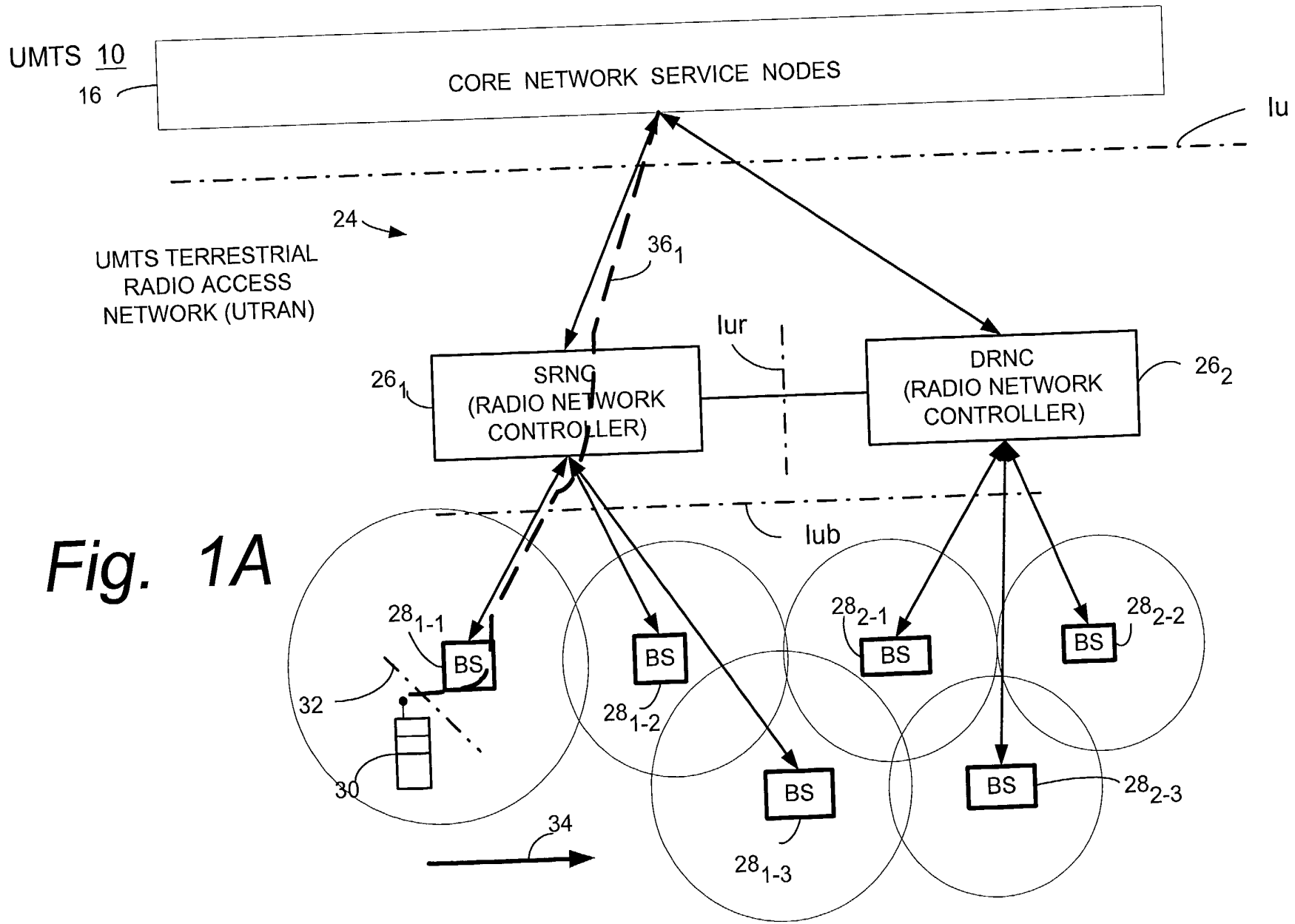

UMTS 10
16
CORE NETWORK SERVICE NODES
Iu
24
UMTS TERRESTRIAL RADIO ACCESS NETWORK (UTRAN)
36 1
Iur
26 1
SRNC (RADIO NETWORK CONTROLLER)
DRNC (RADIO NETWORK CONTROLLER)
26 2
Iub
28 1-1
BS
32
30
28 1-2
28 1-3
34
28 2-1
28 2-2
28 2-3

Fig. 1A

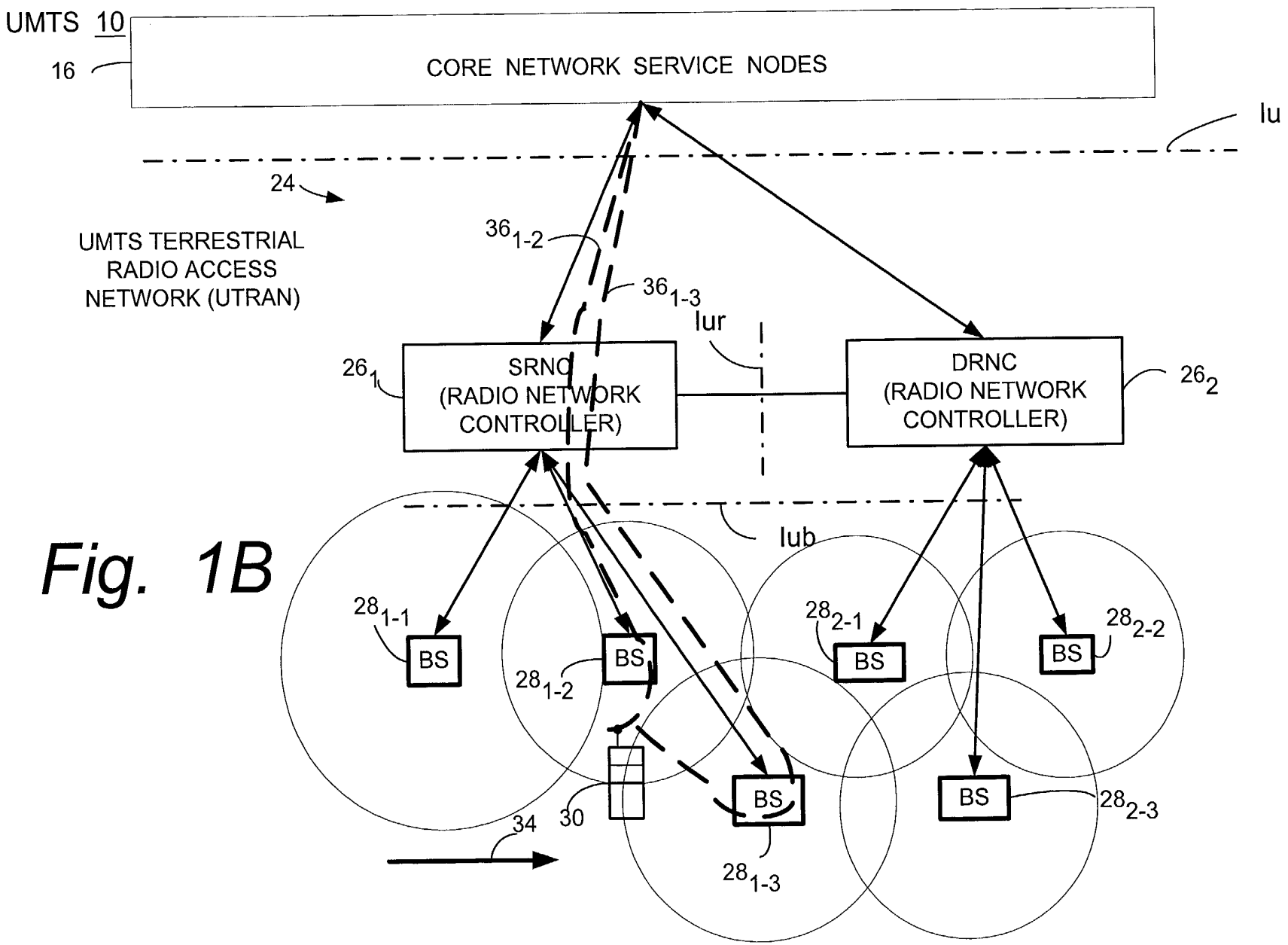

UMTS 10
16
CORE NETWORK SERVICE NODES
Iu
24
UMTS TERRESTRIAL RADIO ACCESS NETWORK (UTRAN)
36 1-2
36 1-3
Iur
26 1
SRNC (RADIO NETWORK CONTROLLER)
DRNC (RADIO NETWORK CONTROLLER)
26 2
Iub
28 1-1
BS
28 1-2
BS
28 2-1
BS
28 2-2
BS
30
34
BS
28 1-3
BS
28 2-3

Fig. 1B

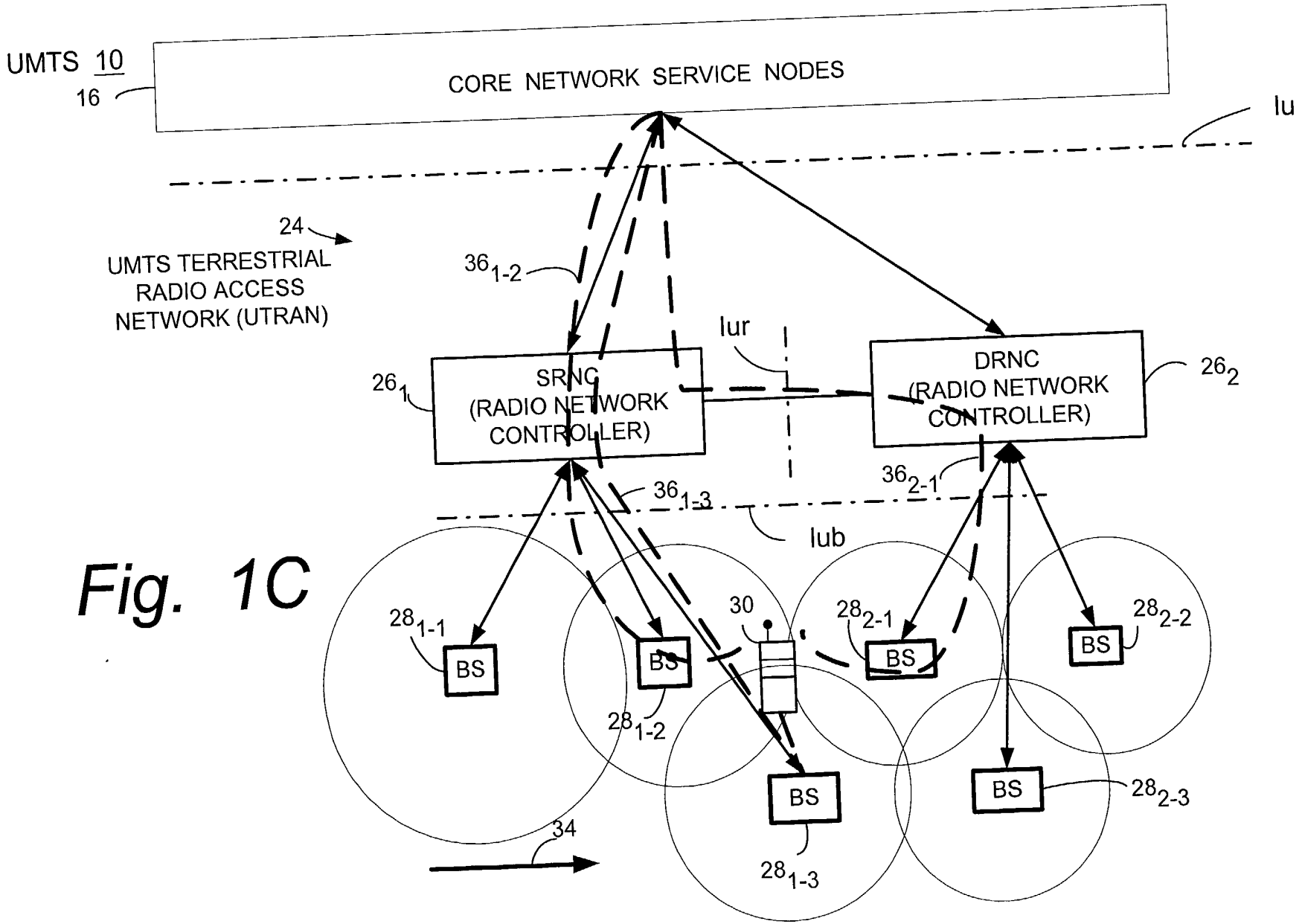

UMTS 10
16
CORE NETWORK SERVICE NODES
Iu
24
UMTS TERRESTRIAL RADIO ACCESS NETWORK (UTRAN)
36 1-2
Iur
SRNC (RADIO NETWORK CONTROLLER)
26 1
DRNC (RADIO NETWORK CONTROLLER)
26 2
36 2-1
36 1-3
Iub
28 1-1
BS
28 1-2
30
28 2-1
28 2-2
28 1-3
28 2-3
34

Fig. 1C

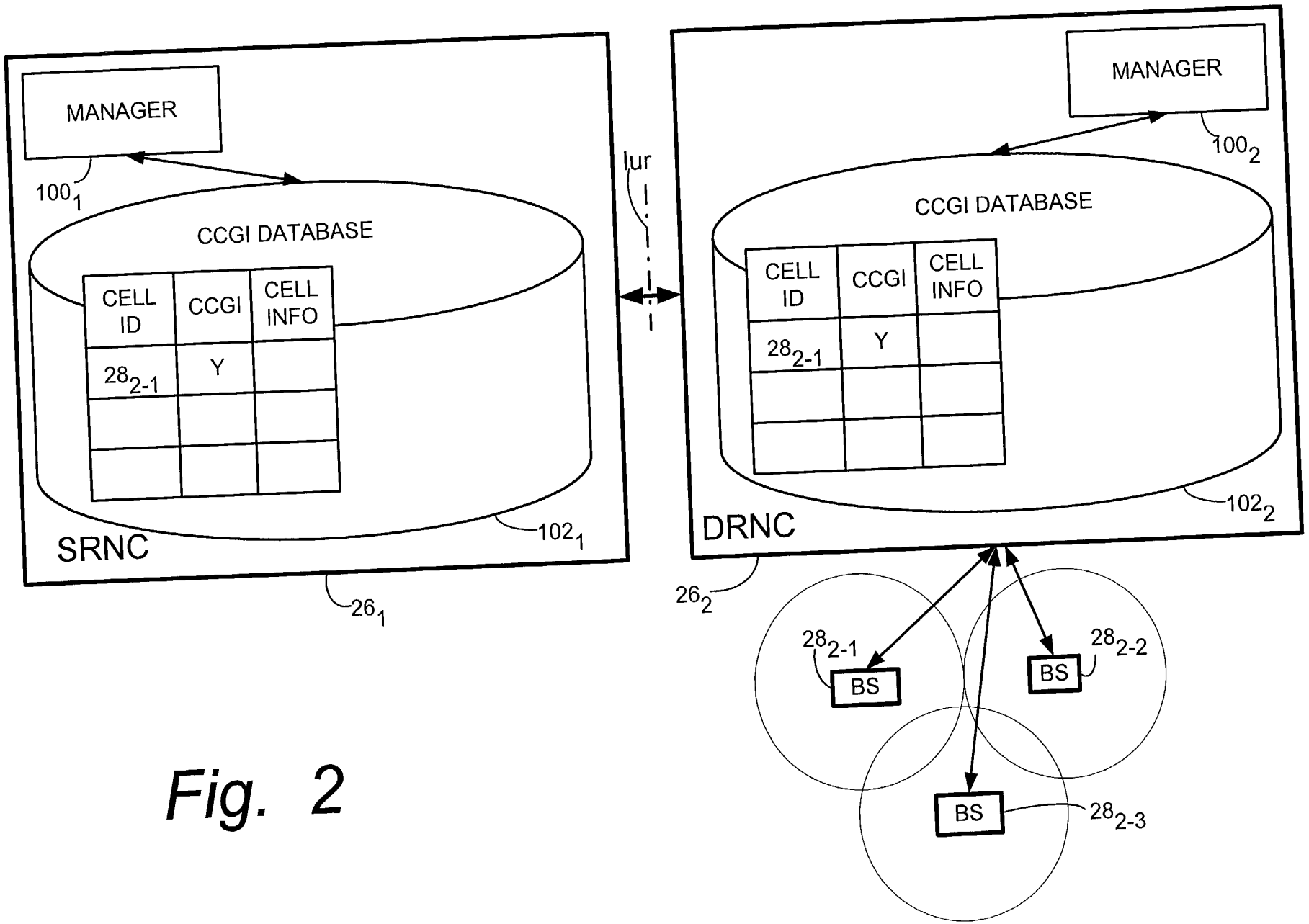

MANAGER
100_1
CCGI DATABASE
CELL ID
CCGI
CELL INFO
28_{2-1}
Y
SRNC
102_1
26_1
Iur
MANAGER
100_2
CCGI DATABASE
CELL ID
CCGI
CELL INFO
28_{2-1}
Y
DRNC
102_2
26_2
28_{2-1}
BS
28_{2-2}
BS
BS
28_{2-3}

Fig. 2

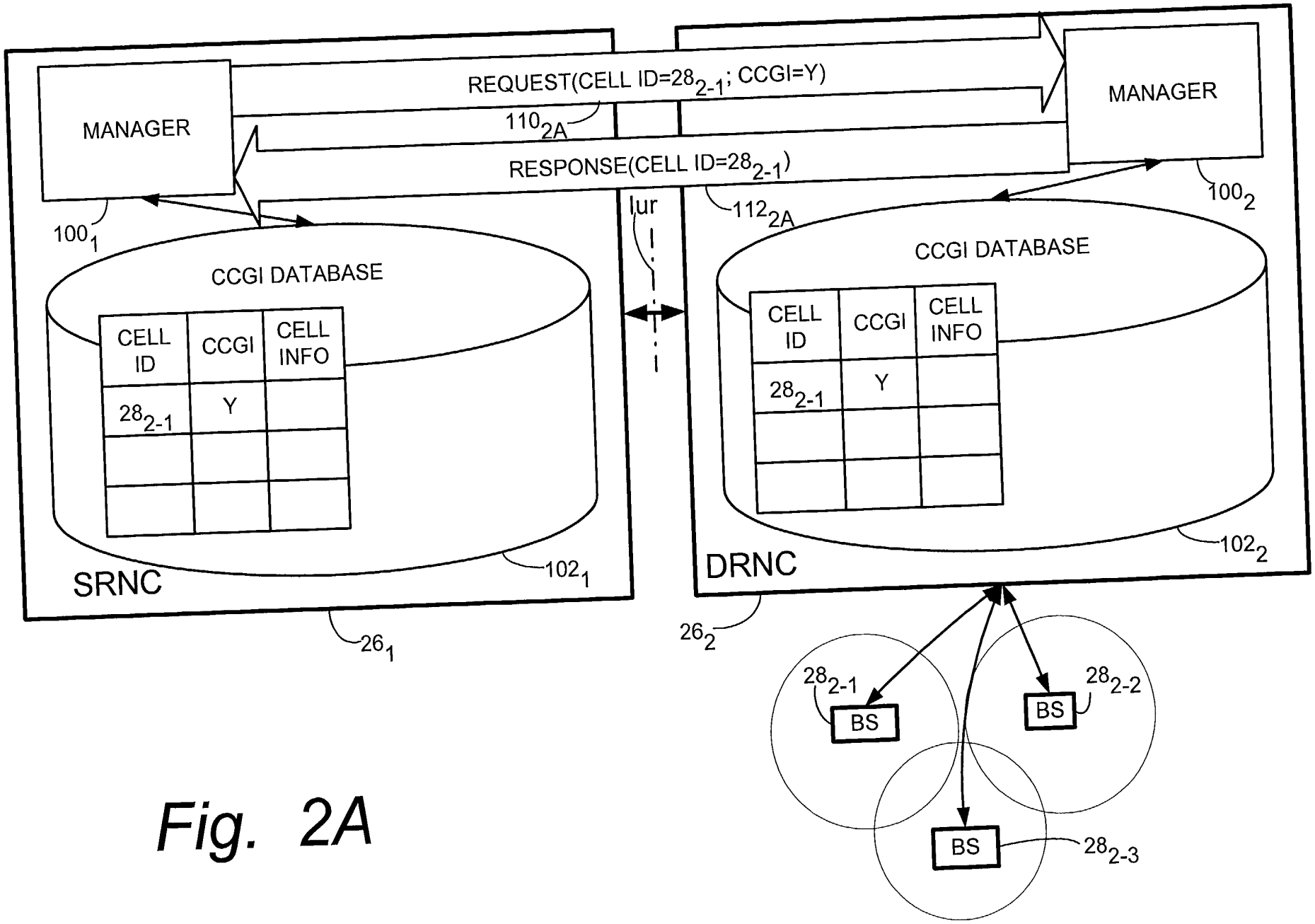

MANAGER
REQUEST(CELL ID=28 2-1; CCGI=Y)
110 2A
RESPONSE(CELL ID=28 2-1)
MANAGER
100 2
112 2A
100 1
Iur
CCGI DATABASE
CELL ID
CCGI
CELL INFO
28 2-1
Y
CCGI DATABASE
CELL ID
CCGI
CELL INFO
28 2-1
Y
102 1
102 2
SRNC
DRNC
26 1
26 2
28 2-1
BS
28 2-2
BS
BS
28 2-3

Fig. 2A

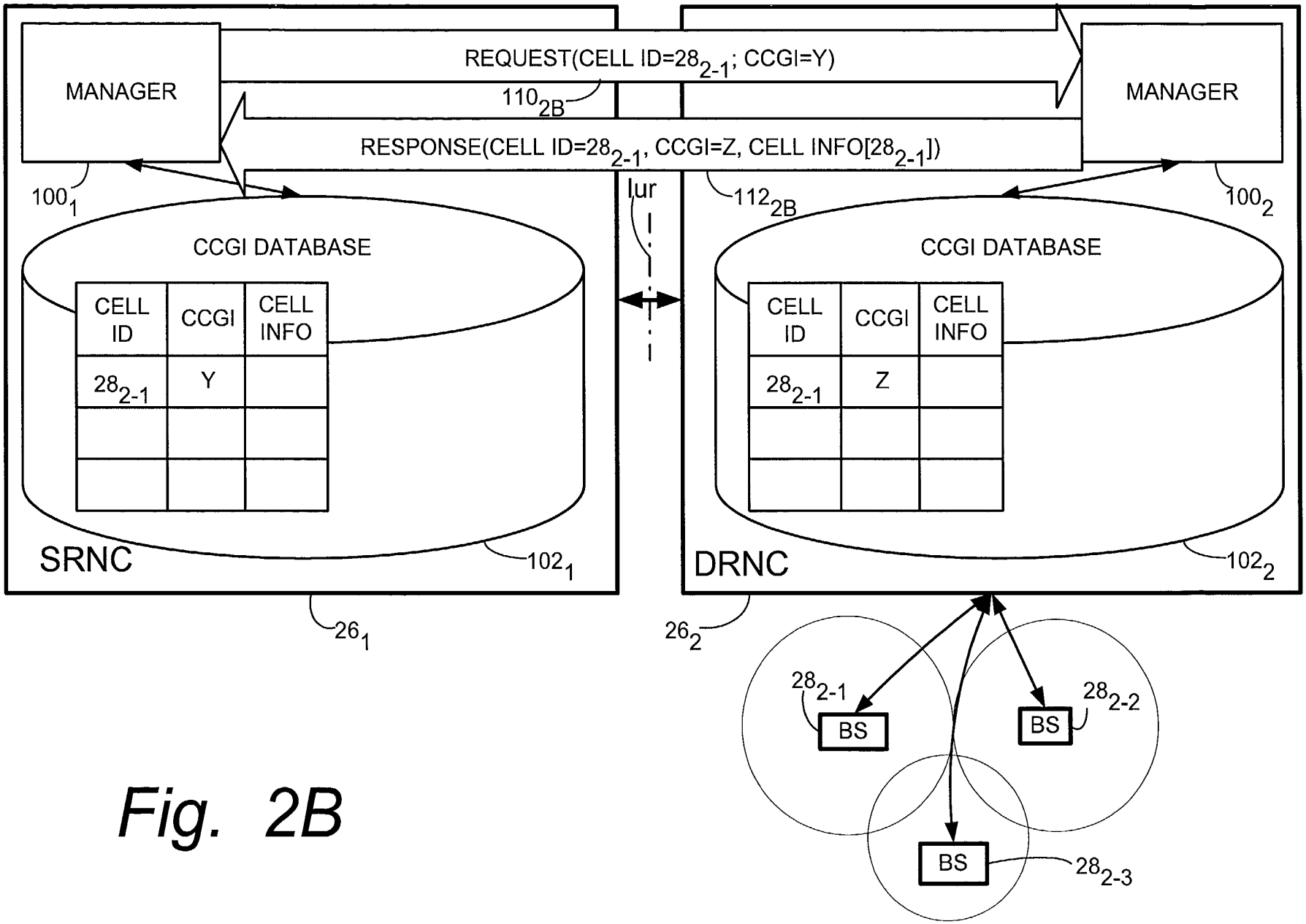
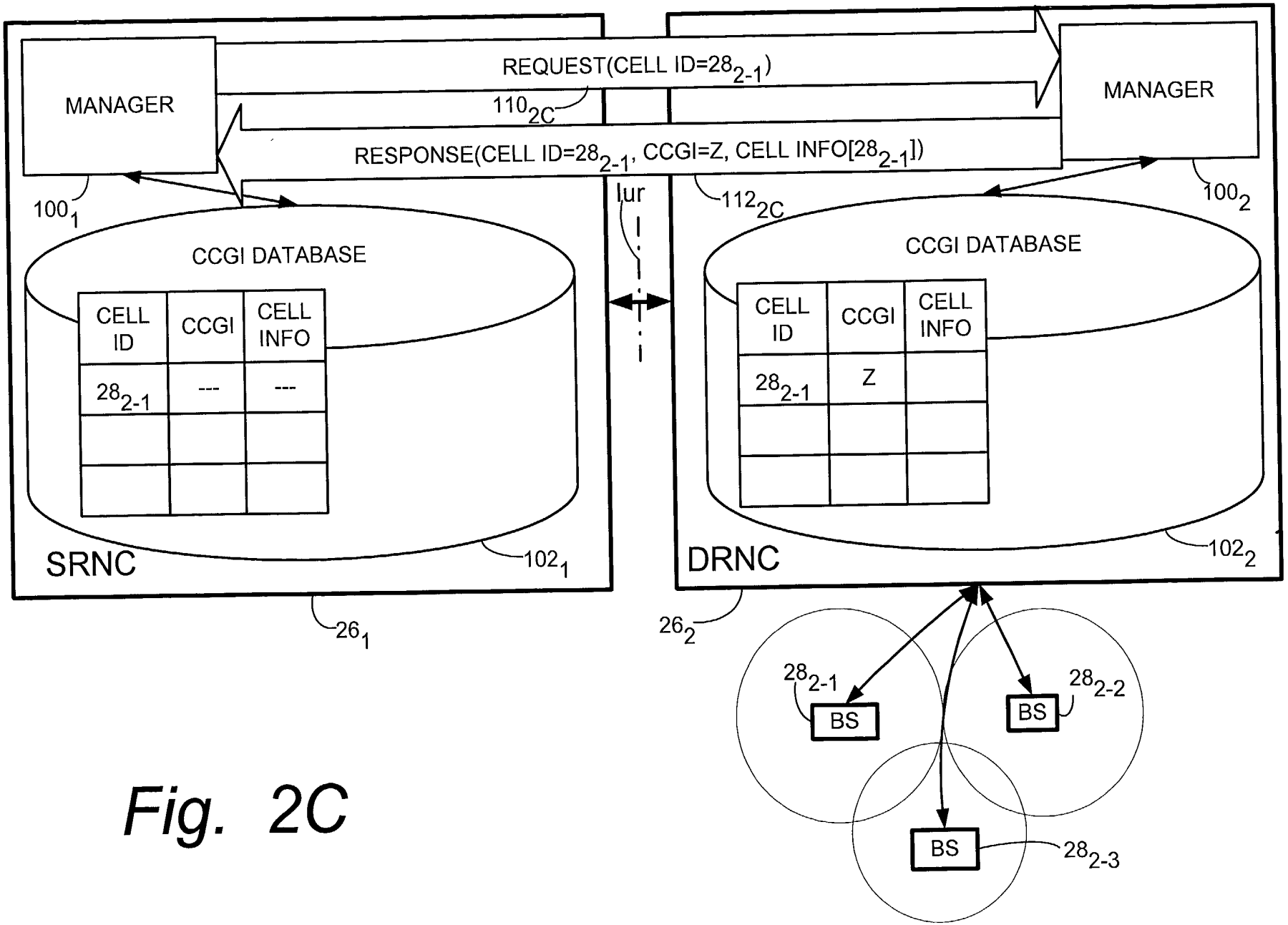

MANAGER
REQUEST(CELL ID=28 2-1; CCGI=Y)
110 2B
RESPONSE(CELL ID=28 2-1, CCGI=Z, CELL INFO[28 2-1])
MANAGER
100 1
Iur
112 2B
100 2
CCGI DATABASE
CELL ID
CCGI
CELL INFO
28 2-1
Y
CCGI DATABASE
CELL ID
CCGI
CELL INFO
28 2-1
Z
SRNC
102 1
DRNC
102 2
26 1
26 2
28 2-1
BS
28 2-2
BS
BS
28 2-3

Fig. 2B


MANAGER
REQUEST(CELL ID=28 2-1)
110 2C
RESPONSE(CELL ID=28 2-1, CCGI=Z, CELL INFO[28 2-1])
MANAGER
100 1
Iur
112 2C
100 2
CCGI DATABASE
CELL ID
CCGI
CELL INFO
28 2-1

CCGI DATABASE
CELL ID
CCGI
CELL INFO
28 2-1
Z
SRNC
102 1
DRNC
102 2
26 1
26 2
28 2-1
BS
28 2-2
BS
BS
28 2-3

Fig. 2C

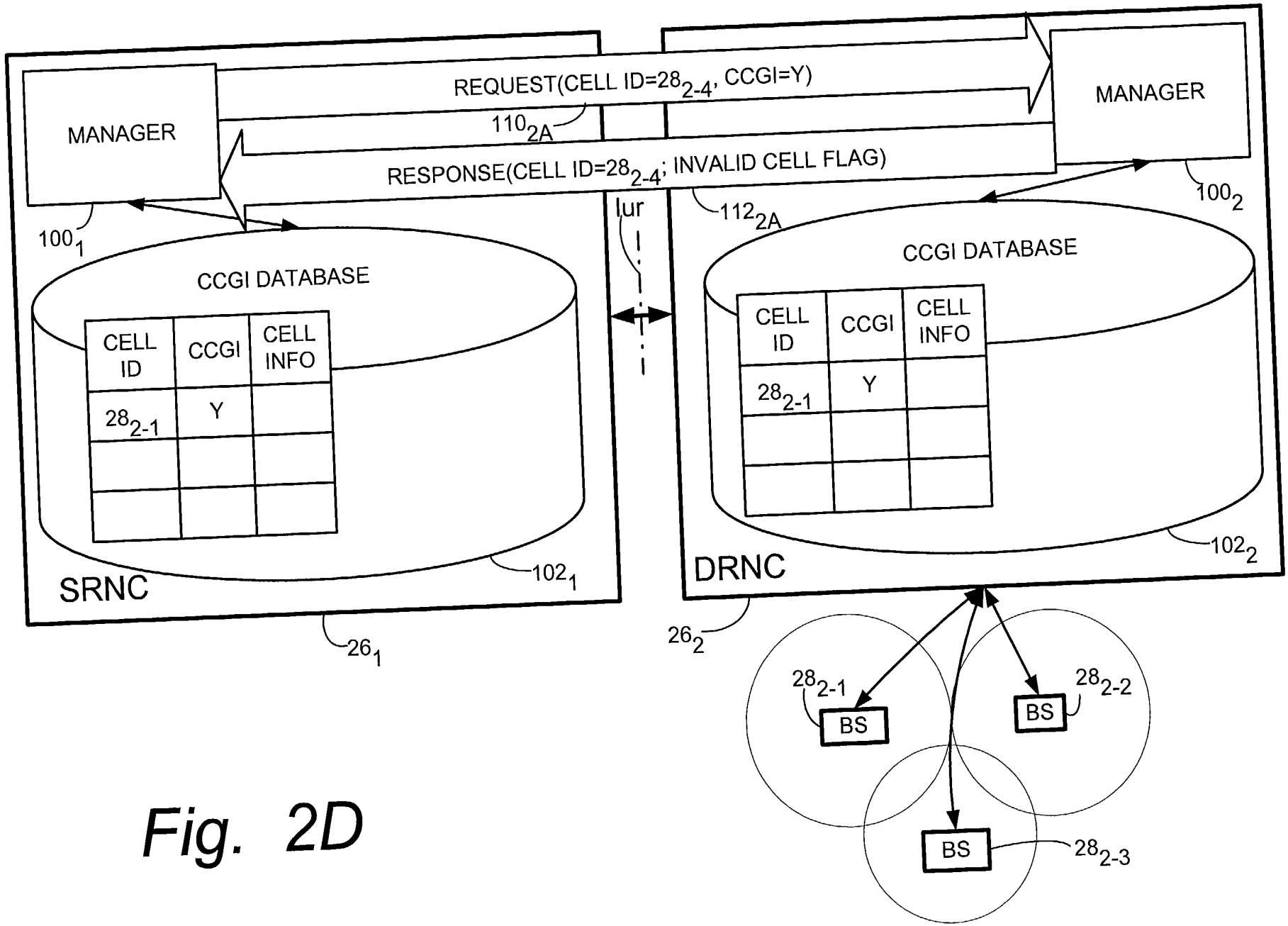

MANAGER
REQUEST(CELL ID=28 2-4, CCGI=Y)
110 2A
RESPONSE(CELL ID=28 2-4; INVALID CELL FLAG)
MANAGER
100 2
100 1
Iur
112 2A
CCGI DATABASE
CELL ID
CCGI
CELL INFO
28 2-1
Y
102 1
SRNC
26 1
CCGI DATABASE
CELL ID
CCGI
CELL INFO
28 2-1
Y
102 2
DRNC
26 2
28 2-1
BS
28 2-2
BS
BS
28 2-3

Fig. 2D

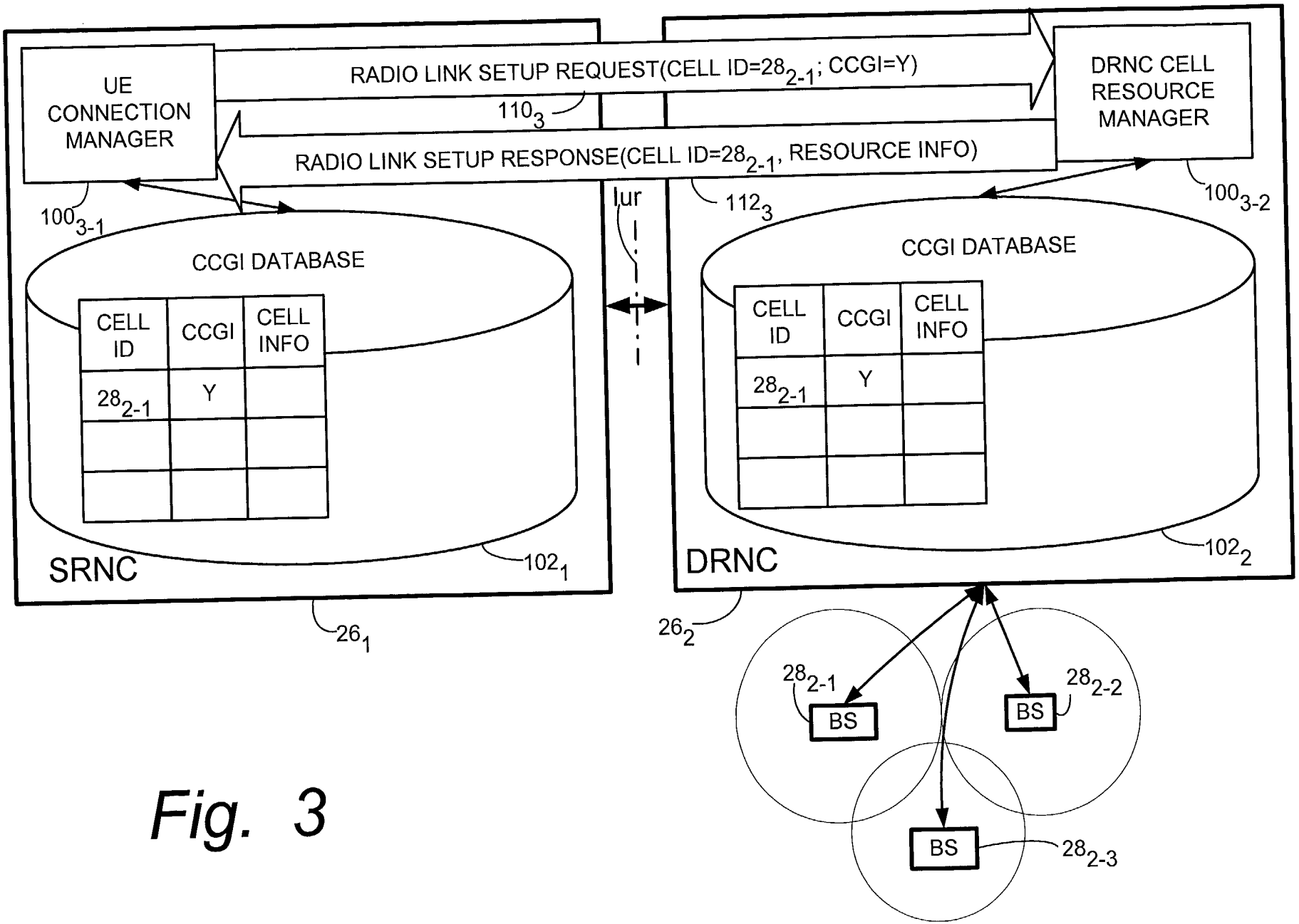

UE CONNECTION MANAGER
RADIO LINK SETUP REQUEST(CELL ID=28 2-1; CCGI=Y)
110 3
RADIO LINK SETUP RESPONSE(CELL ID=28 2-1, RESOURCE INFO)
DRNC CELL RESOURCE MANAGER
100 3-1
Iur
112 3
100 3-2
CCGI DATABASE
CELL ID
CCGI
CELL INFO
28 2-1
Y
102 1
SRNC
26 1
CCGI DATABASE
CELL ID
CCGI
CELL INFO
28 2-1
Y
102 2
DRNC
26 2
28 2-1
BS
28 2-2
BS
BS
28 2-3

Fig. 3

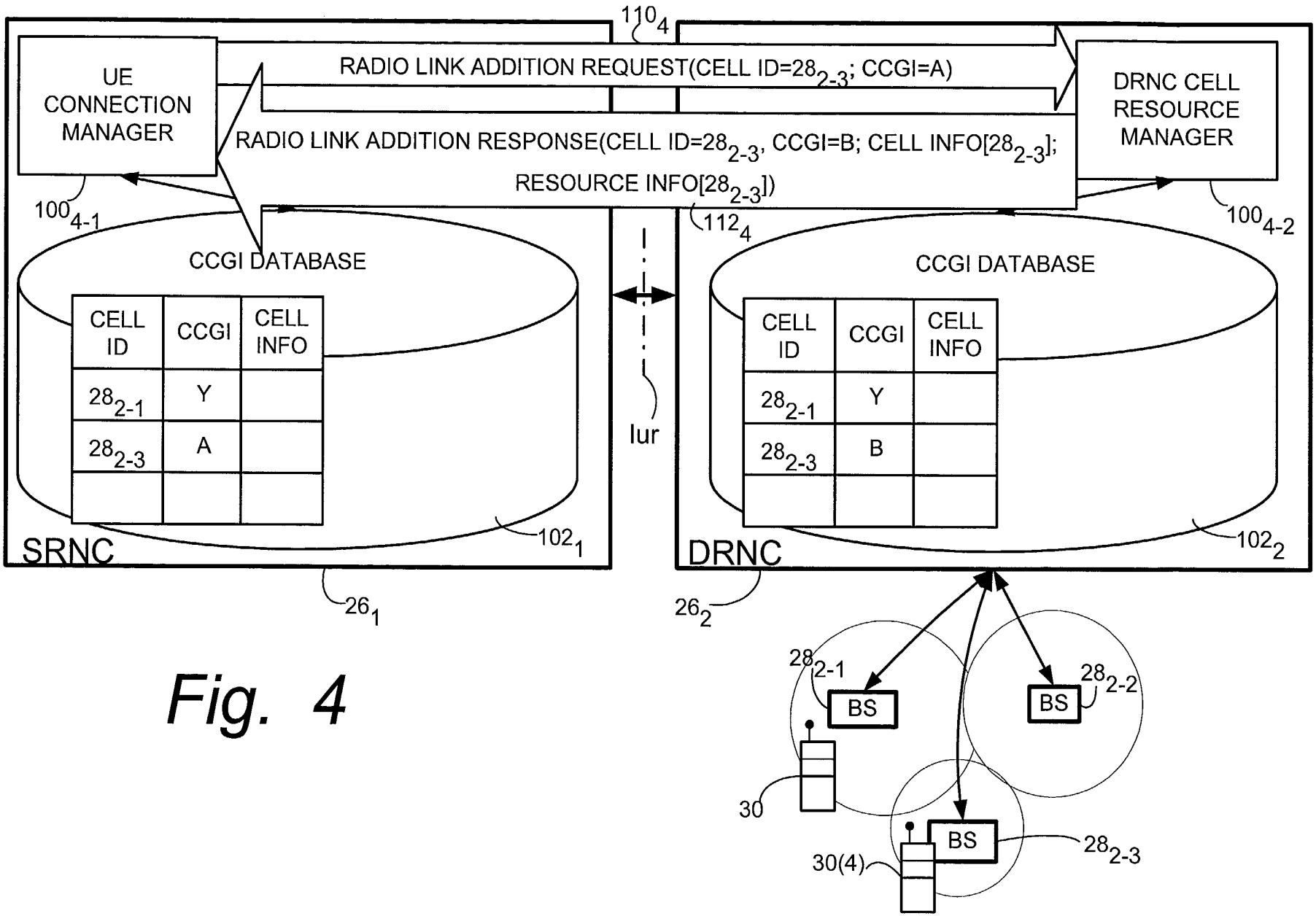

110_4
UE CONNECTION MANAGER
RADIO LINK ADDITION REQUEST(CELL ID=28_{2-3}; CCGI=A)
RADIO LINK ADDITION RESPONSE(CELL ID=28_{2-3}, CCGI=B; CELL INFO[28_{2-3}]; RESOURCE INFO[28_{2-3}])
DRNC CELL RESOURCE MANAGER
100_{4-1}
100_{4-2}
112_4
CCGI DATABASE
CELL ID
CCGI
CELL INFO
28_{2-1}
Y
28_{2-3}
A
B
Iur
SRNC
DRNC
102_1
102_2
26_1
26_2
28_{2-1}
28_{2-2}
28_{2-3}
BS
30
30(4)

Fig. 4

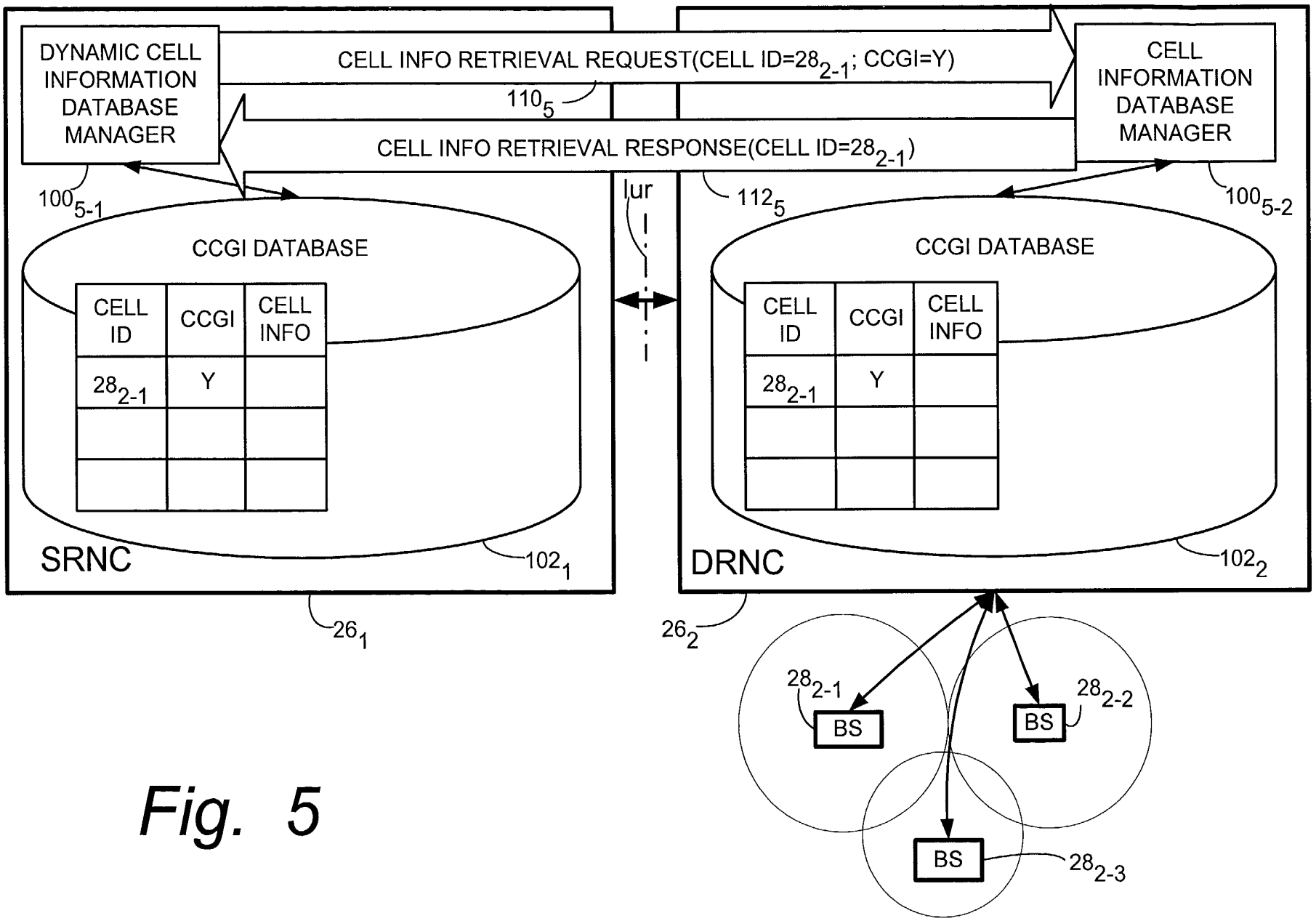

DYNAMIC CELL INFORMATION DATABASE MANAGER
CELL INFO RETRIEVAL REQUEST(CELL ID=28 2-1; CCGI=Y)
110 5
CELL INFO RETRIEVAL RESPONSE(CELL ID=28 2-1)
CELL INFORMATION DATABASE MANAGER
100 5-1
Iur
112 5
100 5-2
CCGI DATABASE
CELL ID
CCGI
CELL INFO
28 2-1
Y
SRNC
102 1
DRNC
102 2
26 1
26 2
28 2-1
BS
28 2-2
BS
BS
28 2-3

Fig. 5

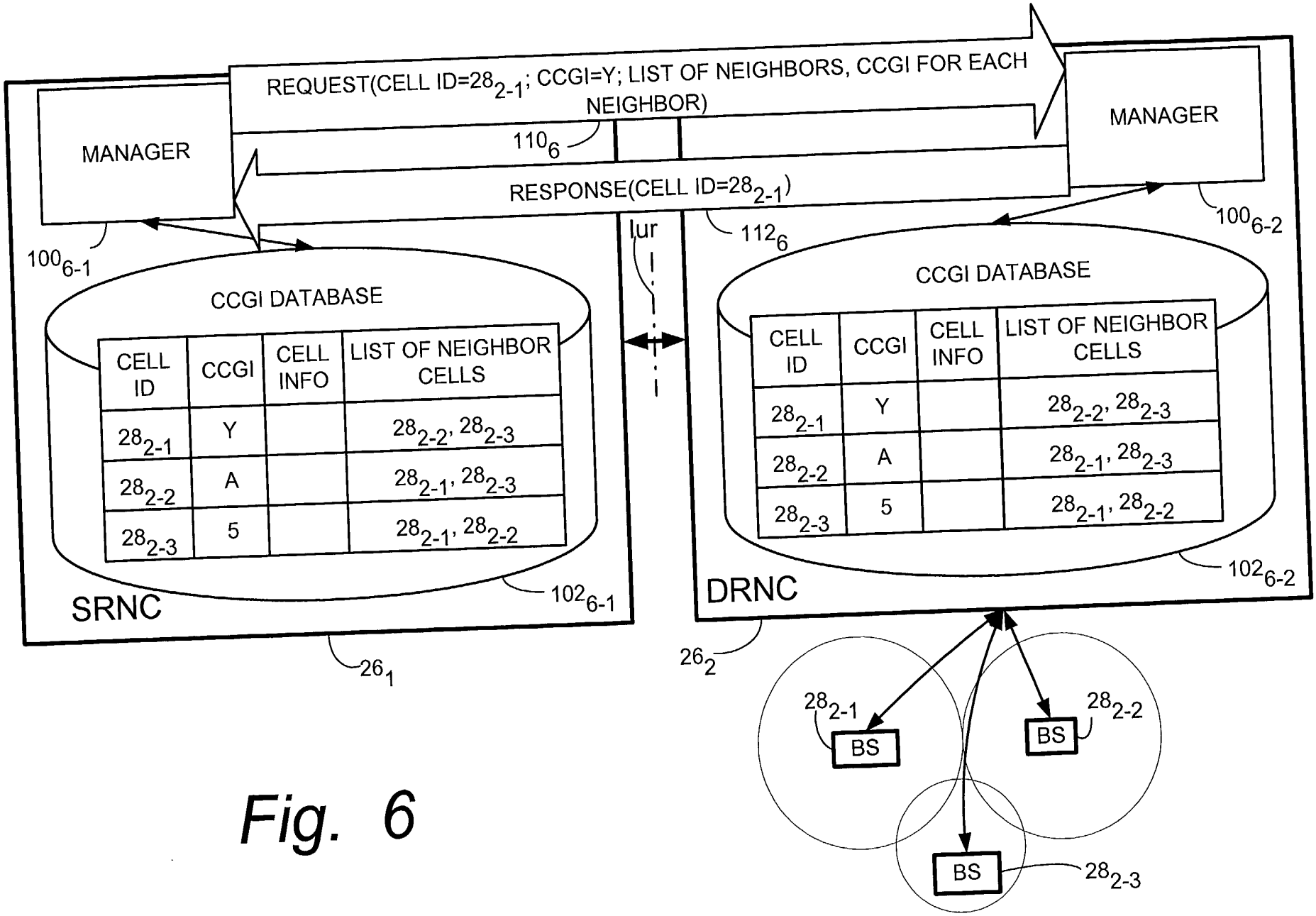

REQUEST(CELL ID=28 2-1; CCGI=Y; LIST OF NEIGHBORS, CCGI FOR EACH NEIGHBOR)
110 6
RESPONSE(CELL ID=28 2-1)
MANAGER
MANAGER
100 6-1
100 6-2
112 6
Iur
CCGI DATABASE
CELL ID | CCGI | CELL INFO | LIST OF NEIGHBOR CELLS
28 2-1 | Y | | 28 2-2, 28 2-3
28 2-2 | A | | 28 2-1, 28 2-3
28 2-3 | 5 | | 28 2-1, 28 2-2
102 6-1
SRNC
26 1
CCGI DATABASE
CELL ID | CCGI | CELL INFO | LIST OF NEIGHBOR CELLS
28 2-1 | Y | | 28 2-2, 28 2-3
28 2-2 | A | | 28 2-1, 28 2-3
28 2-3 | 5 | | 28 2-1, 28 2-2
102 6-2
DRNC
26 2
28 2-1
BS
28 2-2
BS
BS
28 2-3

Fig. 6

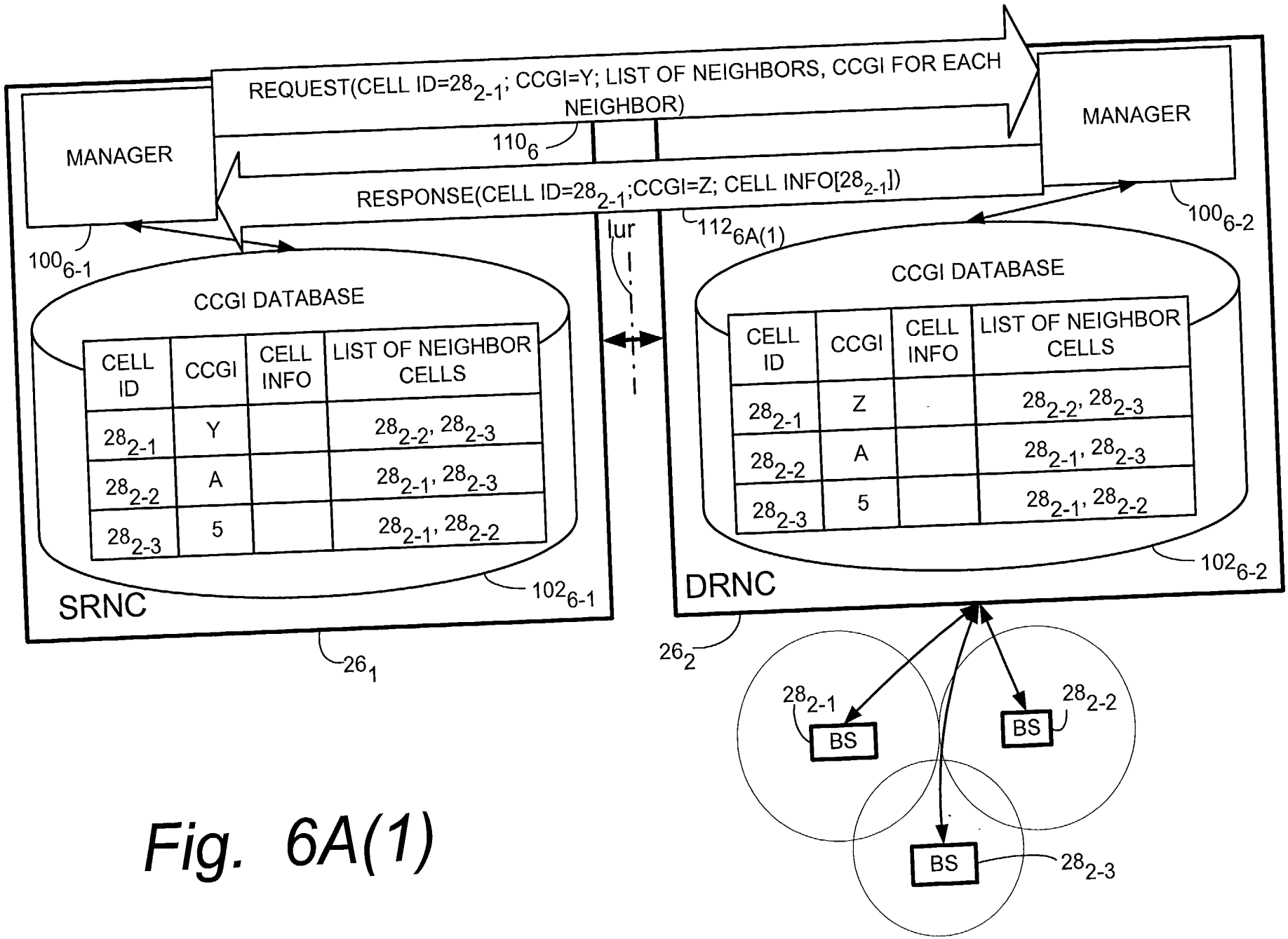

REQUEST(CELL ID=28 2-1; CCGI=Y; LIST OF NEIGHBORS, CCGI FOR EACH NEIGHBOR)
110 6
RESPONSE(CELL ID=28 2-1;CCGI=Z; CELL INFO[28 2-1])
MANAGER
MANAGER
100 6-1
100 6-2
112 6A(1)
Iur
CCGI DATABASE
CELL ID | CCGI | CELL INFO | LIST OF NEIGHBOR CELLS
28 2-1 | Y | | 28 2-2, 28 2-3
28 2-2 | A | | 28 2-1, 28 2-3
28 2-3 | 5 | | 28 2-1, 28 2-2
102 6-1
SRNC
26 1
CCGI DATABASE
CELL ID | CCGI | CELL INFO | LIST OF NEIGHBOR CELLS
28 2-1 | Z | | 28 2-2, 28 2-3
28 2-2 | A | | 28 2-1, 28 2-3
28 2-3 | 5 | | 28 2-1, 28 2-2
102 6-2
DRNC
26 2
28 2-1
BS
28 2-2
BS
BS
28 2-3

Fig. 6A(1)

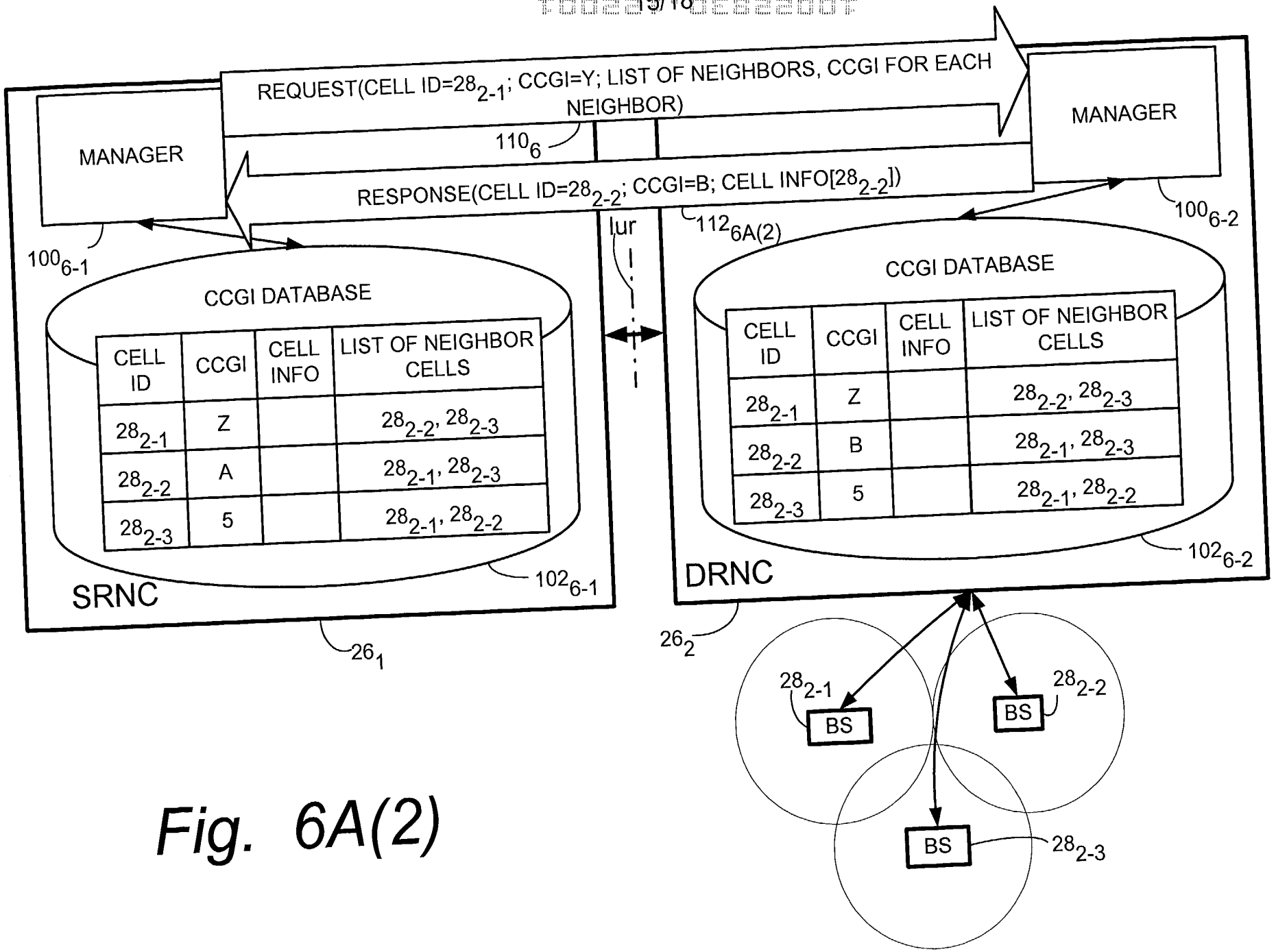

REQUEST(CELL ID=28 2-1; CCGI=Y; LIST OF NEIGHBORS, CCGI FOR EACH NEIGHBOR)
110 6
RESPONSE(CELL ID=28 2-2; CCGI=B; CELL INFO[28 2-2])
MANAGER
MANAGER
100 6-1
100 6-2
112 6A(2)
lur
CCGI DATABASE
CELL ID | CCGI | CELL INFO | LIST OF NEIGHBOR CELLS
28 2-1 | Z | | 28 2-2, 28 2-3
28 2-2 | A | | 28 2-1, 28 2-3
28 2-3 | 5 | | 28 2-1, 28 2-2
102 6-1
SRNC
26 1
CCGI DATABASE
CELL ID | CCGI | CELL INFO | LIST OF NEIGHBOR CELLS
28 2-1 | Z | | 28 2-2, 28 2-3
28 2-2 | B | | 28 2-1, 28 2-3
28 2-3 | 5 | | 28 2-1, 28 2-2
102 6-2
DRNC
26 2
28 2-1
BS
28 2-2
BS
BS
28 2-3

Fig. 6A(2)

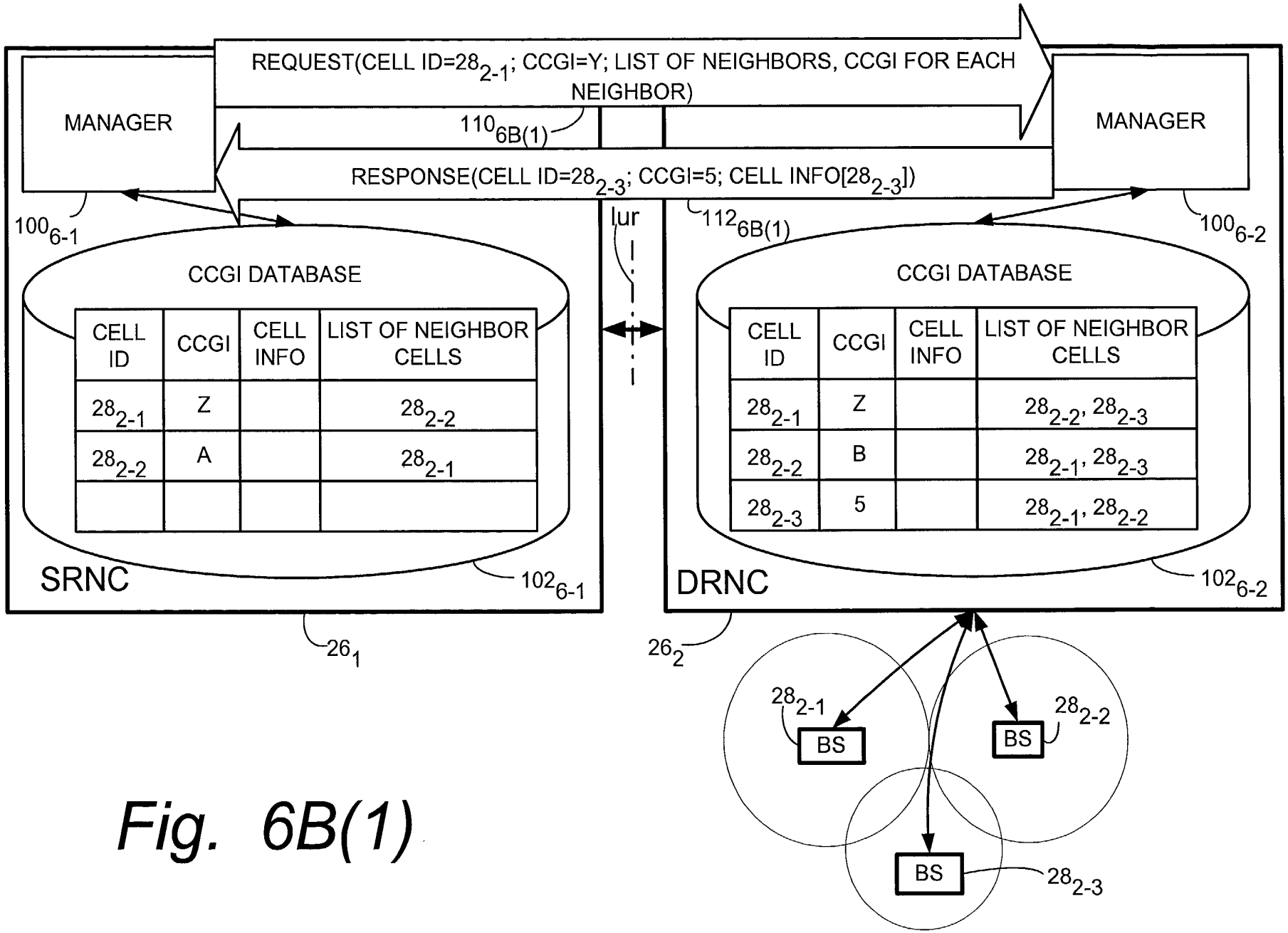

REQUEST(CELL ID=28 2-1; CCGI=Y; LIST OF NEIGHBORS, CCGI FOR EACH NEIGHBOR)
MANAGER
110 6B(1)
MANAGER
RESPONSE(CELL ID=28 2-3; CCGI=5; CELL INFO[28 2-3])
100 6-1
Iur
112 6B(1)
100 6-2
CCGI DATABASE
CELL ID | CCGI | CELL INFO | LIST OF NEIGHBOR CELLS
28 2-1 | Z | | 28 2-2
28 2-2 | A | | 28 2-1
SRNC
102 6-1
CCGI DATABASE
CELL ID | CCGI | CELL INFO | LIST OF NEIGHBOR CELLS
28 2-1 | Z | | 28 2-2, 28 2-3
28 2-2 | B | | 28 2-1, 28 2-3
28 2-3 | 5 | | 28 2-1, 28 2-2
DRNC
102 6-2
26 1
26 2
28 2-1
BS
28 2-2
BS
BS
28 2-3

Fig. 6B(1)

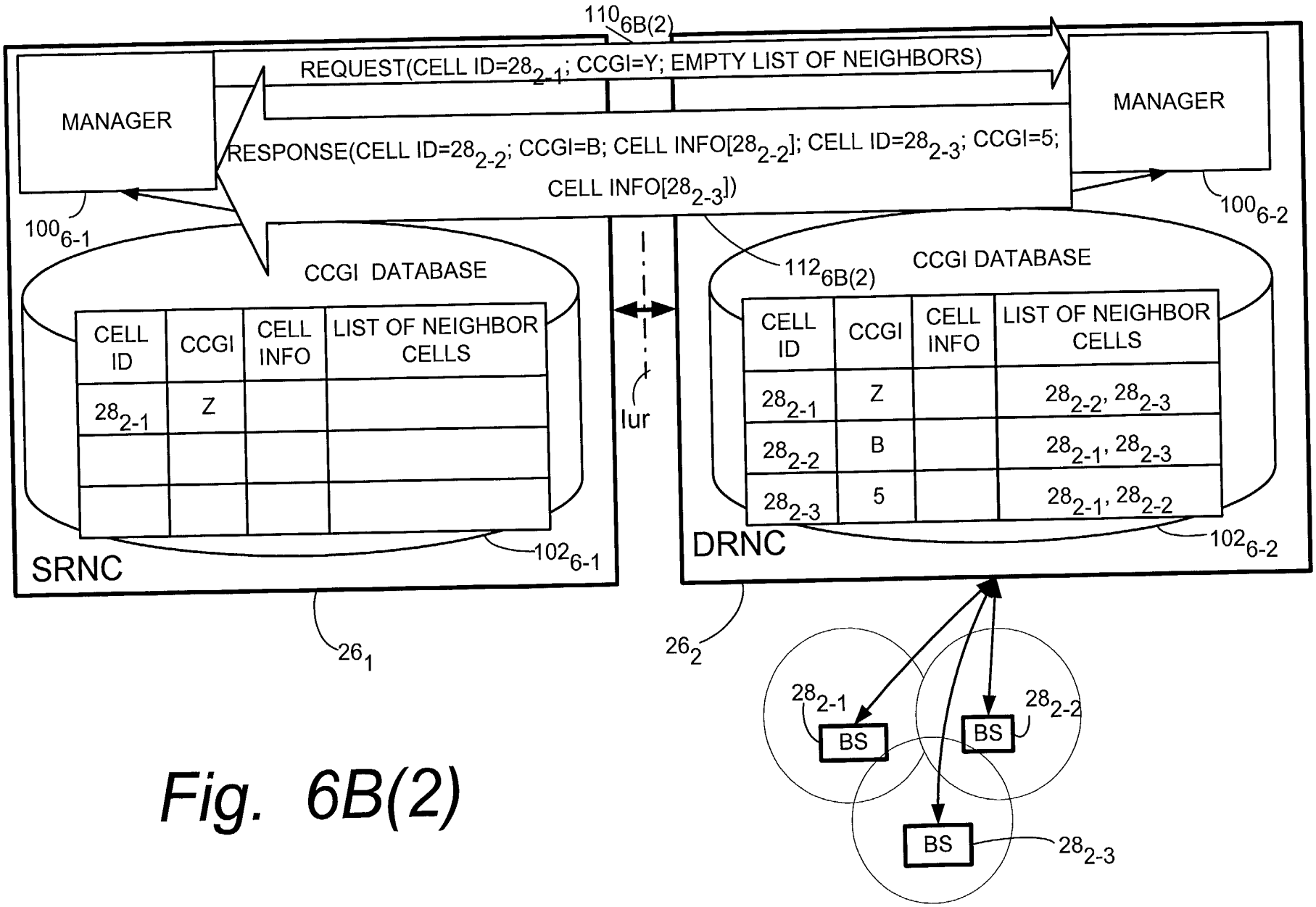

110 6B(2)
REQUEST(CELL ID=28 2-1; CCGI=Y; EMPTY LIST OF NEIGHBORS)
RESPONSE(CELL ID=28 2-2; CCGI=B; CELL INFO[28 2-2]; CELL ID=28 2-3; CCGI=5; CELL INFO[28 2-3])
MANAGER
MANAGER
100 6-1
100 6-2
CCGI DATABASE
CELL ID | CCGI | CELL INFO | LIST OF NEIGHBOR CELLS
28 2-1 | Z
112 6B(2)
CCGI DATABASE
CELL ID | CCGI | CELL INFO | LIST OF NEIGHBOR CELLS
28 2-1 | Z | | 28 2-2, 28 2-3
28 2-2 | B | | 28 2-1, 28 2-3
28 2-3 | 5 | | 28 2-1, 28 2-2
Iur
SRNC
DRNC
102 6-1
102 6-2
26 1
26 2
28 2-1
28 2-2
28 2-3
BS
BS
BS

Fig. 6B(2)

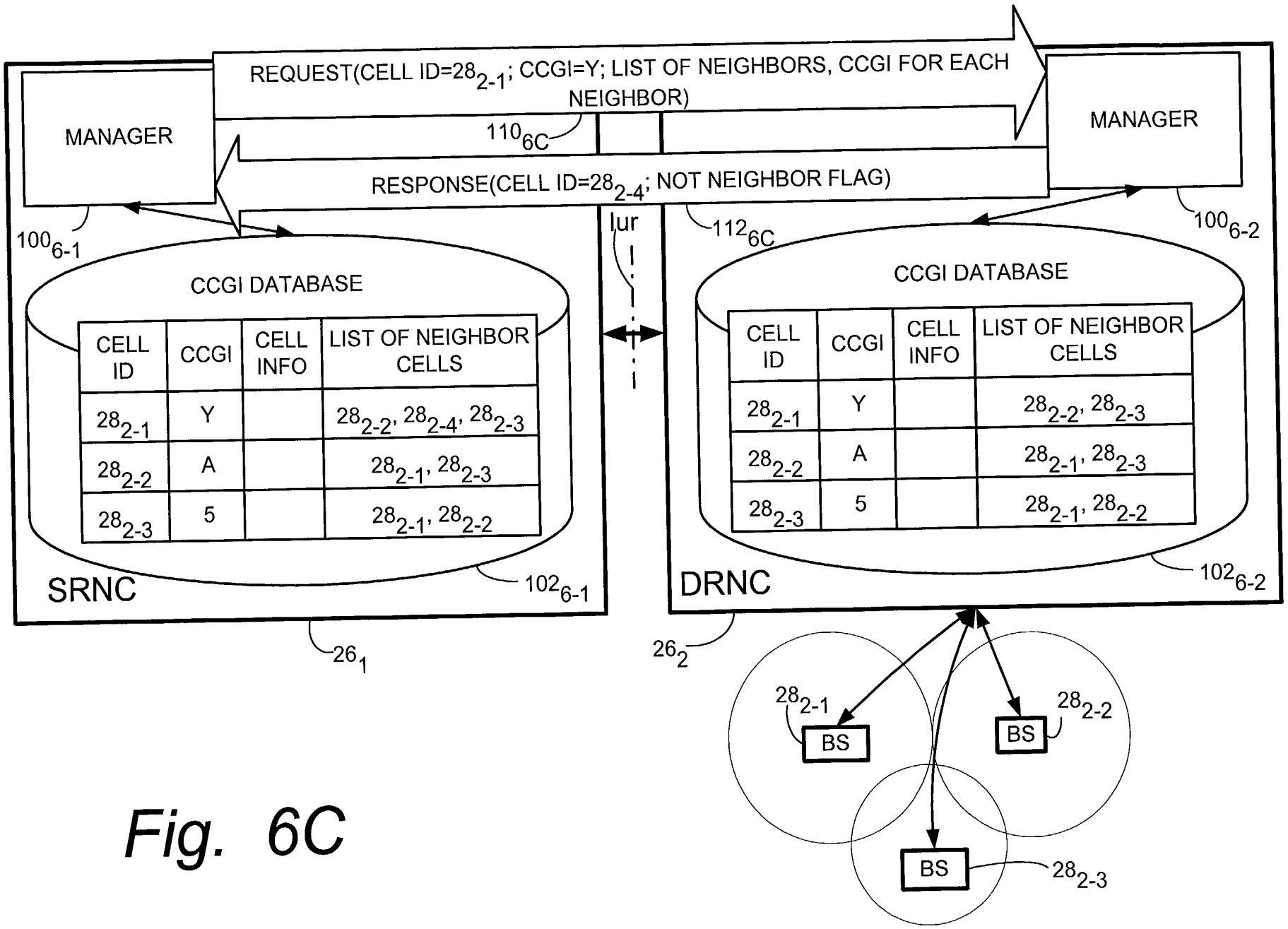

REQUEST(CELL ID=28 2-1; CCGI=Y; LIST OF NEIGHBORS, CCGI FOR EACH NEIGHBOR)
110 6C
RESPONSE(CELL ID=28 2-4; NOT NEIGHBOR FLAG)
MANAGER
MANAGER
100 6-1
100 6-2
Iur
112 6C
CCGI DATABASE
CELL ID | CCGI | CELL INFO | LIST OF NEIGHBOR CELLS
28 2-1 | Y | | 28 2-2, 28 2-4, 28 2-3
28 2-2 | A | | 28 2-1, 28 2-3
28 2-3 | 5 | | 28 2-1, 28 2-2
SRNC
102 6-1
26 1
CCGI DATABASE
CELL ID | CCGI | CELL INFO | LIST OF NEIGHBOR CELLS
28 2-1 | Y | | 28 2-2, 28 2-3
28 2-2 | A | | 28 2-1, 28 2-3
28 2-3 | 5 | | 28 2-1, 28 2-2
DRNC
102 6-2
26 2
28 2-1
BS
28 2-2
BS
BS
28 2-3

Fig. 6C